ALBERTA OIL & GAS INDUSTRY

QUARTERLY UPDATE

WINTER 2013

Reporting on the period: Nov. 16, 2013, to Jan. 31, 2013

Alberta Government

All about oil and gas*

Technology is setting the stage for another boom in Alberta's non-oil sands oil and natural gas industry. Until the last few years, the sun had slowly been setting on Alberta's conventional oil and natural gas industry. Oil production had declined from a peak of 1.43 million barrels a day in 1973 to a low of around 460,000 barrels per day in 2010.

But things are changing for the better, as increased implementation of long horizontal wells and multistage fracturing in tight oil plays across the province—not to mention new provincial royalty incentives to encourage drilling—has crude oil drilling activity and production on the upswing. Although natural gas activity has slowed due to weak prices, Alberta is poised to benefit once a price correction occurs.

In fact, the tight oil revolution that began in the United States and gradually moved north into Alberta marks the dawning of a new day for oil and natural gas exploration and production in the province.

In Alberta, the new technology is being used in an increasing number of oil plays. Among the most advanced plays are the Cardium in west-central Alberta, the Beaverhill Lake Carbonates near Swan Hills, the Viking in east-central Alberta and at Red Water north of Edmonton, in the Pemiscot at Princess in southern Alberta, and at Judy Creek in northwestern Alberta. Additionally, emerging plays include the Alberta Bakken in the southern reaches of the province, and in oil windows in the Duvernay and Montney shale.

High drilling activity in these areas will offset the steep decline in Alberta conventional production that would otherwise be expected.

In 2011, 3,170 successful oil wells were drilled, an increase of 37 per cent from 2010. The last time Alberta experienced this high level of oil drilling was in 2005. From this total, 1,818 new horizontal oil wells (including those using multistage fracturing technology) were brought on production in 2011, an increase of 78 per cent from 2010 levels of 1,023 horizontal wells. This raises the total number of horizontal wells to 6,643.

The number of new vertical oil wells placed on production is projected to be 1,440 in 2012, and is expected to decline to 1,040 wells in 2021. Although this well count is relatively low and reflects the view that many new wells will be horizontal wells using multistage fracturing technology, the 2012 forecast for the number of vertical wells has increased relative to last year, based on 2011 industry levels.

The number of new horizontal oil wells forecast to be placed on production in 2012 and beyond is projected to increase from 1,818 in 2011 to 2,160 in 2012 and 2013, and to decline gradually to 1,560 in 2021.

Although low natural gas prices have reduced drilling activity in Alberta for that commodity the past few years, when prices rebound the province will be well positioned to capitalize.

Canada is the third-largest natural gas producer in the world, with about 80 per cent of the country's gas being produced in Alberta. According to provincial figures, at the end of 2010, remaining established reserves of conventional natural gas stood at 36.4 trillion cubic feet, while remaining established coalbed methane (CBM) gas reserves stood at 2.4 trillion cubic feet. Reserve additions as a result of new drilling replaced 46 per cent of 2010 gas production. The province estimates the remaining ultimate potential of marketable conventional natural gas at 74 trillion cubic feet.

Although conventional natural gas remains a very important part of Alberta's natural gas supply, horizontal drilling and multi-stage fracturing now allow for development of natural gas from a new source—unconventional natural gas resources. Aside from CBM, Alberta's unconventional natural gas resources include tight gas (natural gas trapped in low-permeability sedimentary rocks, such as sandstone or limestone) and shale gas (trapped in shale rock).

For conventional natural gas, in 2011, 2,310 new conventional gas connections were placed on production in the province, a decrease of 24 per cent from 2010. This was the fifth straight year of reductions in conventional gas connections. The number of horizontal gas wells drilled and connected in the province is increasing as a percentage of the total. In 2011, about 25 per cent of new gas connections were horizontal wells compared with 14 per cent in 2010. ■

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*This publication contains information about Alberta's oil and gas industry, excluding oil sands. For information on the oil sands please refer to the Alberta Oil Sands Industry Quarterly Update on this website.

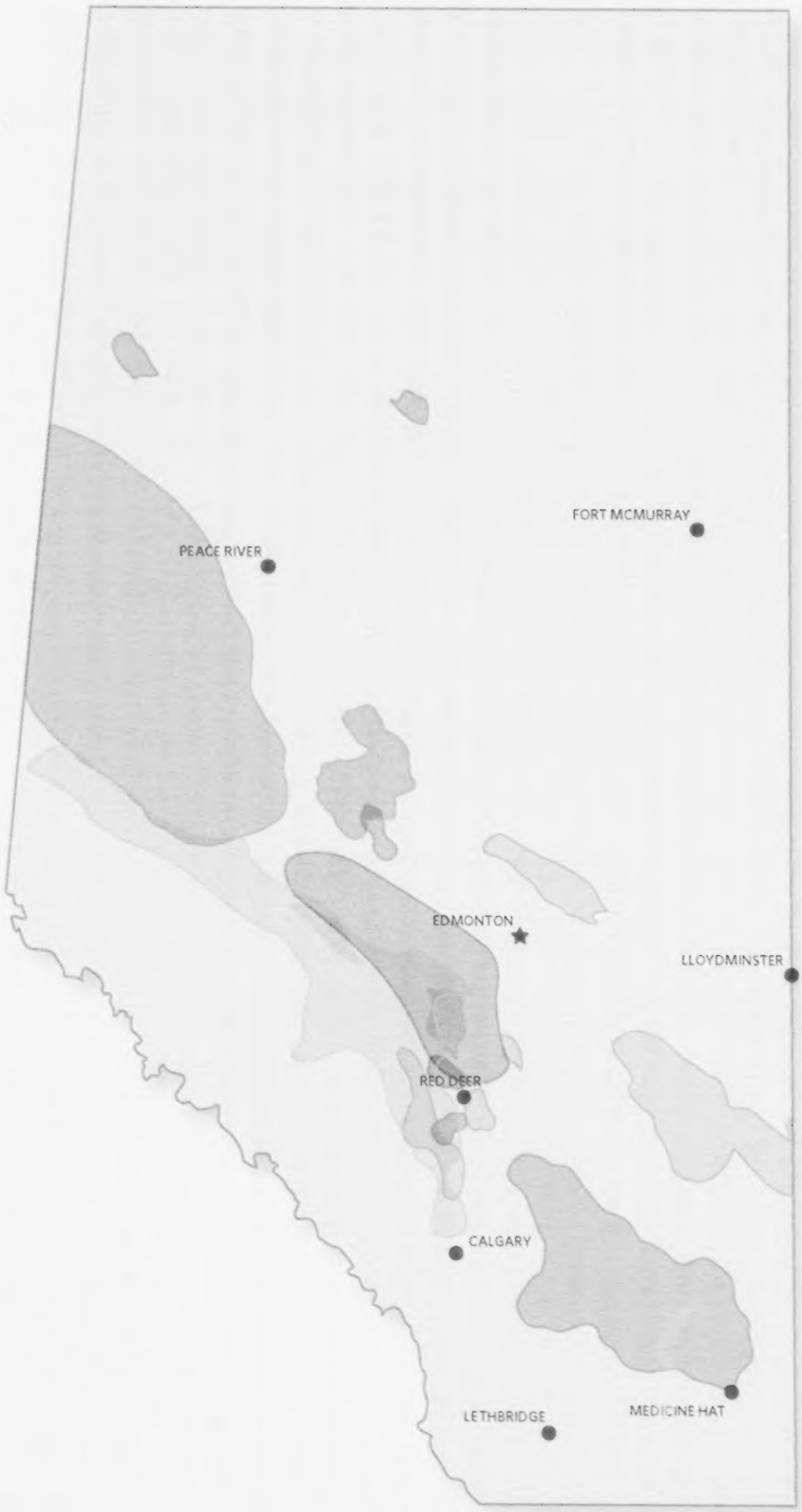
Oil plays

The Alberta Energy Resources Conservation Board (ERCB) estimates the remaining established reserves of conventional crude oil in Alberta to be 1.5 billion barrels, representing about one-third of Canada's remaining conventional reserves.

This is a year-over-year increase of 3.8 per cent, resulting from production, reserves adjustments and additions from drilling that occurred during 2011.

In 1994, based on the geological prospects at that time, the ERCB estimated the ultimate potential of conventional crude oil to be 19.7 billion barrels. Given recent reserve growth in low permeability, or tight oil plays, the ERCB believes that this estimate may be low.

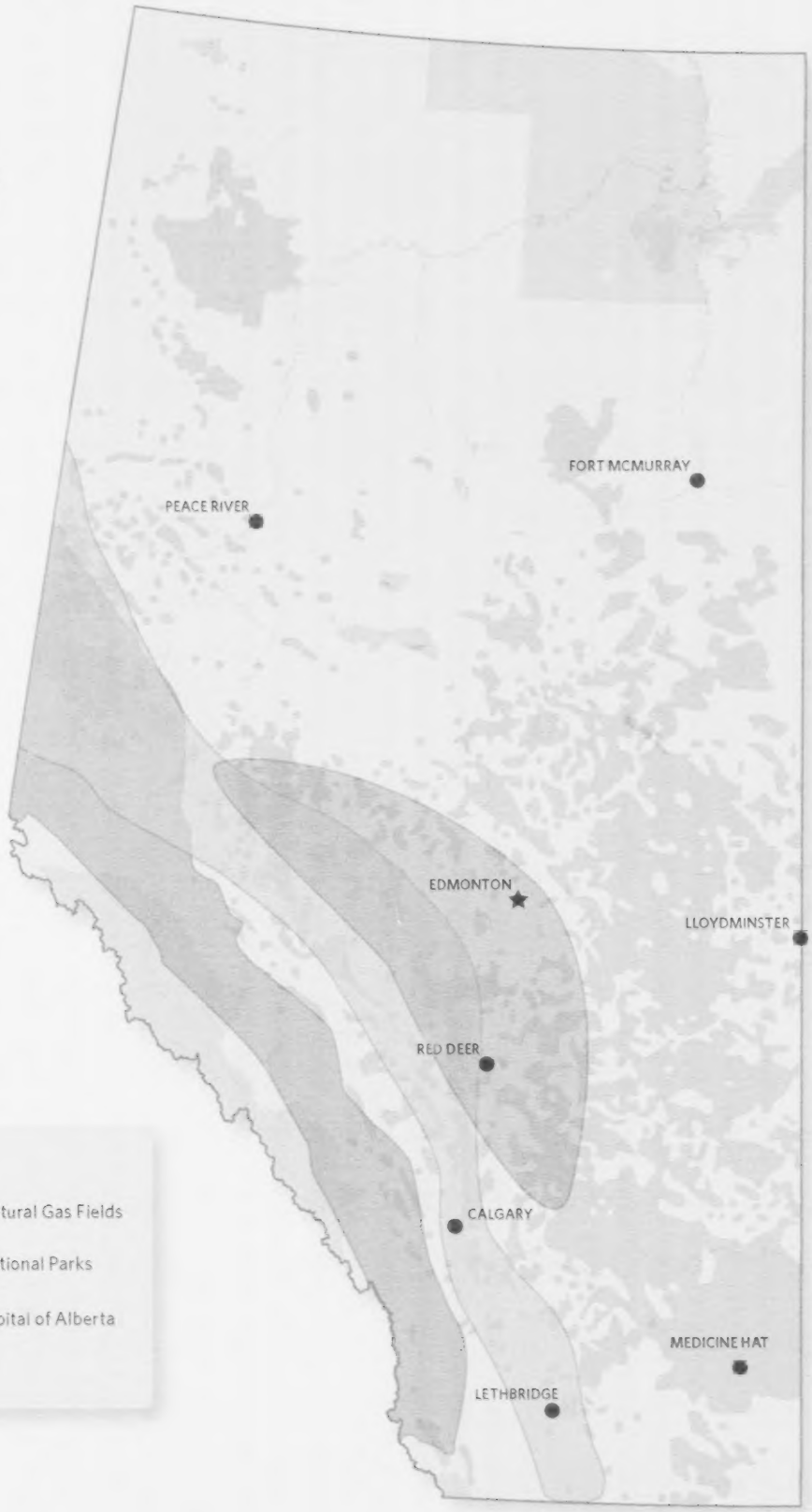
Starting in 2010, total crude oil production in Alberta reversed the downward trend that was the norm since the early 1970s. In 2010 and 2011, light-medium crude oil production began to increase as a result of increased, mainly horizontal, drilling activity with the introduction of multistage hydraulic fracturing technology. The successful application of this technology and increased drilling resulted in total crude oil production increasing by seven per cent in 2011. Alberta's production of conventional crude oil totalled 179 million barrels in 2011.



Natural gas plays

Alberta's natural gas bounty is plentiful and is produced from both conventional and unconventional reserves. While the vast majority of the province's natural gas is still produced from conventional sources, growing natural gas volumes from coal, shale and tight formations will also be strong contributors going forward.

Alberta has a large natural gas resource base, with remaining established reserves of about 39 trillion cubic feet and estimated potential of up to 500 trillion cubic feet of natural gas from the coalbed methane resource. In addition, a large-scale resource assessment of shale gas potential in Alberta is underway and could significantly add to the natural gas prospects for the province.



GOVERNMENT UPDATE

ALBERTANS TO BENEFIT FROM NEW ENERGY REGULATOR

The Government of Alberta is protecting the participation rights of landowners, while ensuring that industry has a more efficient and effective regulatory process. The Responsible Energy Development Act will create a single regulator for oil, gas, oil sands and coal development in the province.

This legislation is the result of years of consulting with Albertans and acts on recommendations the Regulatory Enhancement Task Force made two years ago.

"The Responsible Energy Development Act achieves the right balance—it improves the participation rights of landowners, it provides regulatory certainty for energy companies and it upholds our long-standing commitment to the environment," said Energy Minister Ken Hughes.

"The single regulatory approach is something this province needs, and this is the right time; the result will be a benefit to Alberta's economy and to Canada's economy."

During debate, Hughes proposed amendments that would strengthen the bill and further protect landowner rights. The legislature endorsed those amendments, which include:

- Strengthening landowner rights by ensuring the regulatory agency takes their interests into consideration when an application is made;
- Requiring the regulatory agency to give public notice for all project applications it receives;
- Adding the ability for any person who believes they are directly and adversely affected by an application to file a statement of concern with the regulator; and
- Clarity around the appeal mechanism that is in place, to support fair decision making.

The legislation authorizes the new Alberta Energy Regulator to assume the regulatory functions of the Energy Resources Conservation Board (ERCB), and Alberta Environment and Sustainable Resource Development with respect to oil, gas, oil sands and coal development.

The arm's-length body will be governed by a board of directors with a chief executive officer at the helm. A transparent and accountable appeals process will be established, with hearings being conducted by independent hearing commissioners overseeing the process.

ALBERTA LOOKS INTO HYDRAULIC FRACTURING RULES

Alberta Government

The ERCB is accepting feedback on proposed requirements for hydraulic fracturing activities.

Over the last 75 years, the ERCB has developed and enforced regulations to ensure the responsible development of Alberta's oil and gas resources. Constantly working to improve and ensure the relevancy of all regulations, the ERCB reviews and updates its rules in light of new issues, risks, opportunities and challenges, and adapts as technology, experience and social expectations have evolved.

The ERCB has reviewed the challenges and opportunities related to the use of hydraulic fracturing in combination with horizontal drilling in the development of Alberta's conventional and unconventional oil and gas resources.

The ERCB is now seeking feedback on a draft directive that addresses sub-surface issues related to the increasing use of this activity. The draft directive provides clarity on:

- Preventing inter-wellbore communication impacts;
- Ensuring well integrity; and
- Requirements for wells completed in shallow zones, which apply to any depths shallower than 100 metres below the base of groundwater protection.

Alberta has a long history of regulating safe and responsible oil and gas development. The draft directive builds upon a strong foundation of regulation to address potential risks identified in the ERCB's review.

Surface impacts related to hydraulic fracturing activity will be addressed in the months to come.

Albertans are encouraged to provide feedback on the directive and to help shape the ERCB's regulations. Visit www.ercb.ca for more information. The ERCB has also produced an animated video that explains the nature of unconventional reservoirs and the process of drilling, completing and producing from an unconventional well; it pays particular attention to how the ERCB regulates every step.

ERCB SEEKING FEEDBACK ON REGULATORY APPROACH FOR UNCONVENTIONAL DEVELOPMENT

The ERCB is accepting feedback on the regulation of future unconventional resource development. *Regulating Unconventional Oil and Gas in Alberta—a Discussion Paper* outlines a new approach to oil and gas regulation that encourages early and meaningful stakeholder ➤

Government update *continued*

engagement, minimizes surface impacts, protects water and maximizes resource recovery.

The technology used to develop unconventional resources is not new in Alberta; however, the scale of the developments has the potential to be much larger than Albertans may have experienced in the past. To address the associated challenges with large-scale developments, the ERCB has suggested a new regulatory approach that includes moving from well-by-well regulation, to regulation focused on development within a defined area.

This play-focused regulation would be performance-based to achieve specific outcomes in public safety, water protection, air quality, waste management, surface impacts, resource conservation and orderly development.

Approximately 171,000 wells in Alberta have been stimulated using hydraulic fracturing since the technology was first introduced in the 1950s. Since 2008, approximately 5,000 horizontal wells have been drilled in Alberta using multi-stage hydraulic fracturing to enhance oil and gas recovery.

Albertans are encouraged to participate in the review of the discussion paper, to provide input on, and help shape, the new regulatory approach. Feedback will be accepted until Mar. 31, 2013. Visit www.ercb.ca for more information.

ERCB IMPROVES PUBLIC ACCESS TO HYDRAULIC FRACTURING FLUID INFORMATION

Albertans will soon have online access to information on the fluids used in hydraulic fracturing operations through the FracFocus website (www.fracfocus.ca).

The ERCB Directive 059: *Well Drilling and Completion Data Filing Requirements*, has been updated to enhance reporting requirements for fluids used in hydraulic fracturing operations.

These changes support the ERCB's commitment to the open disclosure of fracture fluids and align with the Government of Alberta's focus on improved transparency in support of responsible development.

The enhanced reporting requirements are effective as of Dec. 31, 2012, and are mandatory for all hydraulic fracturing operations going forward. Albertans will begin to see increasing amounts of information on FracFocus by summer 2013, as data from newly drilled and completed wells is reported under the new reporting rules.

As with all of its regulations, the ERCB will regularly review the directive to ensure it continues to meet its objectives. For a copy of Directive 059, visit www.ercb.ca.

FracFocus.ca has been implemented by the British Columbia Oil and Gas Commission to facilitate the disclosure of hydraulic fracturing fluid information in Canadian jurisdictions. Adoption of the site supports Alberta's participation in the New West Partnership. FracFocus.ca is based on FracFocus.org, a site developed in the United States by the Interstate Oil and Gas Compact Commission and Groundwater Protection Council.

THE *UNCONVENTIONAL RESOURCE GUIDEBOOK AND DIRECTORY*—A ONE-STOP SOURCE FOR UNCONVENTIONAL SECTOR INFORMATION AND CONTACTS

Shale gas, tight gas and more recently tight oil resources have led to resurgence of industry activity in Alberta. An integral part of this is innovation and deployment of new technologies that enabled these hydrocarbon resources to be recovered at economic rates.

While these new leading-edge technologies have been developed for the exploration and development of western Canada's hydrocarbon resources, they could be also applied successfully worldwide.

This conclusion was a driving force behind the development of the first edition of the *Unconventional Resource Guidebook and Directory*. Two partners, including the Government of Alberta and the Canadian Society for Unconventional Resources, came together to work on this important initiative that will help to encourage and facilitate the export of Alberta-based technologies and improve competitiveness of Alberta's industry.

All of the partners saw a growing need to provide a one-stop source for information/contacts related to the rapidly growing unconventional sector. As a result of this successful collaboration, a new publication, entitled the *Unconventional Resource Guidebook and Directory*, was published in November 2012.

This new publication highlights opportunities in this sector in Alberta, and assists both Alberta-based and foreign companies in their unconventional resource operations.

The *Unconventional Resource Guidebook and Directory* showcases Alberta's competencies and innovations in various aspects of the unconventional resource sector through company profiles and success stories, and provides editorial overviews of technology, institutions and policy initiatives that contribute to Alberta's competitiveness.

Moreover, publicizing our unconventional resource development experience and potential coincides with the province's strategy of promoting awareness of our clean energy industry.

The digital edition of the *Unconventional Resource Guidebook and Directory* is available at http://www.junewarren-nickles.com/page.aspx?id=unconventional. Subscribers to *Oilweek*, published by JuneWarren-Nickle's Energy Group, receive a complimentary copy of the *Unconventional Resource Guidebook and Directory*. ■

What's new in the oil and gas industry

FIRST ALBERTA LAND SALE OF 2013 DRAWS $85.05 MILLION

The Alberta government's first land sale of 2013 produced total revenue of $85.05 million on January 10, with the high bonus parcels appearing to have been driven by interest for the Montney play.

A total of 354,476 hectares exchanged hands at an average price of $239.94 per hectare. The first sale of 2012 generated $63.43 million in auction revenue for 157,063 hectares at an average price of $403.88. Most of the high bonus parcels acquired this were located west of the sixth meridian.

"I think that the sale was driven primarily by the Montney," said Brad Hayes, president of Petrel Robertson Consulting Ltd.

Operators picked up specific small licences of interest—only two parcels were greater than four sections, and most are one to three sections. In some cases, this may be a case of simply tidying up the final land position, or recent reversions on part of the play, or in some cases operators may be focusing on particular shows, especially liquids-rich shows, in the Montney.

"Most of the parcels are posted for deeper rights below existing Cretaceous production, although some small segments of the postings are for all rights," Hayes said. "Shallower plays may be driving the bids on one or two parcels, and one must keep in mind that there are many plays stacked in this part of the basin, so sometimes there's a surprise."

UPDATED DRILLING FORECAST ESTIMATES MODEST UPTICK IN ACTIVITY

In its first update to the 2013 Canadian drilling activity forecast released January 24, the Petroleum Services Association of Canada (PSAC) increased its forecasted number of wells drilled (rig released) across Canada for 2013 to 11,475 wells.

This is an increase of 75 wells from PSAC's original 2013 forecast released in early November 2012.

The service industry organization said it is basing its updated 2013 forecast on average natural gas prices of C$2.95 per thousand cubic feet at AECO, and crude oil prices of US$90 per barrel West Texas Intermediate and the Canadian dollar averaging US$1.

On a provincial basis for 2013, PSAC now estimates 7,165 wells to be drilled in Alberta, representing a two per cent increase from the original forecast. British Columbia is also expected to experience an increase in drilling levels from 385 to 435 wells, a 13 per cent increase. Estimates for Saskatchewan remain steady at 3,199 wells. Manitoba is now forecasted to drill 100 fewer wells at 650 for the year representing a 13 per cent change.

"Due to continued natural gas development in northeastern British Columbia, we've adjusted our numbers to reflect that activity," said Mark Salkeld, president and chief executive officer of PSAC, in a news release. "At the same time, we are seeing increased activity in northern Alberta with exploratory wells.

"Alternatively, infrastructure bottlenecks in Manitoba, including restricted pipeline capacity, are creating backup and oversupply in the province."

PSAC presents updates to its forecast quarterly with the mid-year update scheduled to be presented on April 25.

"We are optimistic that our forecast update at the mid-year point will show relative stability from our now updated forecast of 11,475 wells," Salkeld added.

DUNVEGAN AN ATTRACTIVE PLAY FOR ALBERTA PRODUCERS

"Nobody had ever even heard of the Dunvegan a couple years ago," noted Glenn Gradeen, president and chief executive officer of Tangle Creek Energy Ltd.

Since then, though, Tangle Creek and other companies, especially those in the Kaybob area of northwestern Alberta, have been taking advantage of technological advancements in horizontal drilling and multi-stage hydraulic fracturing to fully exploit light oil reserves from the Upper Cretaceous sandstone formation. "It's a real, emerging hot play," Gradeen said.

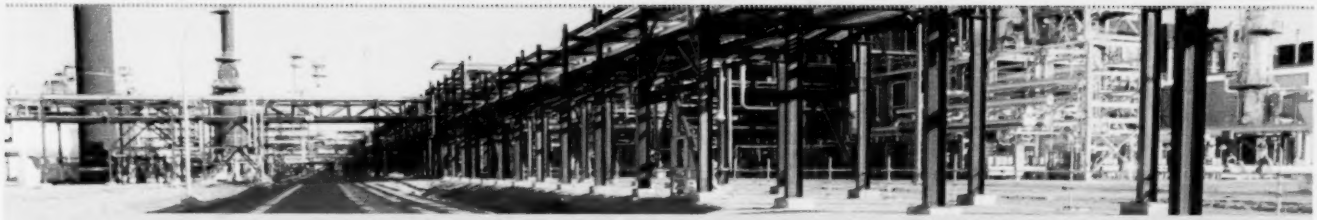
In 2010, Tangle Creek started developing the Kaybob area of Dunvegen, looking for marine-style oily deposits and finding light-oil tight-rock material about 1,600 metres deep in large, thick, sandy packages.

Drilling its first well into the formation in September 2011, Tangle Creek did not know how profitable the endeavour would prove.

"It turned out much better than we had expected," Gradeen said. Initial production over 30 days was about 700 barrels of oil equivalent per day, similar to that from its second Dunvegan well in the area. Both wells produced about 80 per cent oil and 20 per cent natural gas.

Tangle Creek's third well in the area to the northwest of the first two was also highly productive. Although the ratio was a bit more favourable to gas, he said the third well was still producing lots of oil.

According to *Daily Oil Bulletin* data, a total of 32 wells, all horizontals, listing the Dunvegan as the target formation were rig released in the Kaybob area in 2012. Tangle Creek drilled 13 wells, including 10 ➤



listed as oil wells, two as standing-cased and one as standing.

TriOil Resources Ltd. drilled 12 wells, with 10 oil and two standing-cased. Apache Corporation drilled five wells (four oil and one standing), while Trilogy Energy Corp. and Celtic Exploration Ltd. each drilled one oil well.

In comparison, only four Dunvegan oil wells were drilled at Kaybob in 2011. All were Tangle Creek horizontal oil wells.

NOTHING SMALL IN SEPAC'S NAME CHANGE

The Calgary-based Small Explorers and Producers Association of Canada welcomed in the new year by officially changing its moniker to the Explorers and Producers Association of Canada (EPAC).

Founded in 1986, the association represents a wide spectrum of independent oil and gas companies ranging from start-ups to junior and mid-sized producers operating in Canada, the United States and around the world. But with the industry undergoing extensive change over the decades, EPAC executive director Gary Leach said the new name is more reflective of current realities.

"The association has been in existence for nearly 30 years and our board members know first-hand the changes that are transforming the junior and intermediate sector. We wanted to select a name we felt is descriptive of our membership and would be relevant for many decades to come," he said.

"As one of our board members said, 'Our members don't think small,' so we felt the new name better reflects who we represent and the aspirations of our members for the future."

Leach noted that Canada is home to a "great collection of entrepreneurial companies" in the junior and intermediate sector and these companies help make the nation's energy industry one of the "strongest and most unique" in the world.

"Our focus will continue to be to make sure that Canada remains a place where Canadians can start an oil and gas company and find opportunities to grow," Leach said.

"That's what we like to remind politicians, regulators and the public every day, and we will continue to work collaboratively with our colleagues at the Canadian Association of Petroleum Producers and the other upstream industry associations to achieve these goals."

REPORT FORECASTS DOUBLING IN DEMAND FOR CANADIAN NATURAL GAS

Demand for Canadian natural gas will double between 2012 and 2035, driven by liquefied natural gas (LNG), electricity and oil sands demand, said a recent report by The Conference Board of Canada. And that's good news for Alberta, as the province is the nation's leading natural gas producer.

The report released Dec. 17, 2012, said that increased demand will drive $386 billion in investment, generating $364 billion in real gross domestic product, 131,460 jobs per year, $2.5 billion per year in corporate profits and $5.3 billion per year in tax revenues. Natural gas production will contribute another $576 billion to Canada's economy between 2012 and 2035, supporting 129,000 jobs per year, the report said.

"Clearly, the natural gas industry contributes to Canada's economy and to the economy of each province," said Len Coad, director, environment, energy and technology policy, one of the report's authors. "While the benefits are most concentrated where natural gas is produced, economic impacts are felt in manufacturing, construction and services industries in all provinces."

Between 2012 and 2035, a projected $386 billion (in 2012 dollars) will be invested by the natural gas industry, $295 billion of which (76 per cent) will occur in the upstream segment of the industry.

Additional potential investments could occur should LNG capacity, bitumen production or shale gas production exceed the forecast levels.

Investments in Alberta are expected to be about equal to investments in British Columbia. Together, these two provinces will account for $335 billion (2012 dollars), or 86.7 per cent of the total investment.

Additional potential investments could occur should LNG capacity, bitumen production or shale gas production exceed the forecast levels. Investments in additional natural gas–fired electricity generation capacity will be focused in Alberta, Ontario and Saskatchewan.

This report considers current and future markets for Canadian natural gas from 2012 to 2035. Future requirements are profiled by the main sectors of the economy that use natural gas. Market growth will be led by new markets for LNG exports, growth in oil sands requirements for natural gas as a fuel and growing capacity to generate electricity from natural gas. These market opportunities will lead to investments to ensure that supplies continue to be developed and infrastructure built. ■

TECHNOLOGY UPDATE

PAD DRILLING OFFERS ECONOMICAL AND ECOLOGICAL BENEFITS

Increased cost-savings from the technological advancements in horizontal pad drilling goes hand-in-hand with a reduced ecological impact, according to producers embracing this centralized multi-well format.

"It's like having either 30 different gas stations in your community, or one gas station that can handle the volume that 30 can handle," says Brian Spiegelmann, Devon Energy Corp.'s Lloydminster development engineering manager, about the efficiencies associated with pad operations.

Devon is routinely working upon farmland around the Lloydminster and Bonnyville areas of Alberta, so reducing the company's environmental impact is important out of respect for the agricultural industry, he says. Centralizing multiple wellheads on a single pad reduces the number of holding tanks required at each well, for example, and means less travelling across ground surface because all the wellheads are on the same spot.

"The idea of a pad is, in a holistic sense, it's trying to minimize the footprint."

Jim Surbey, vice-president, corporate development, Birchcliff Energy Ltd., says pad drilling simultaneously offers a financial benefit for companies while promoting better environmental operations.

"In the Montney/Doig resource play we're on, it's a big play and there are lots of wells to be drilled. If there are local residents, they don't want you to populate the entire area with drill sites and wellsites. So we think it's prudent to aggregate into one area—to the extent that you can—with one pad."

Pads definitely reduce the land-reclamation costs for companies—one of the many financial benefits from this increasingly popular means of extracting oil and gas on the western Canadian landscape, he says.

According to Bellatrix Exploration Ltd.'s executive vice-president, Brent Eshleman, pads are quite effective when used on vast resource-rich stretches such as the Cardium, where companies regularly drill multiple wells in a given section.

"You put the rig on the pad and you can just drill the wells and complete them back-to-back as you go, because then you don't have to move the rig," he says. Moving a rig even a short distance can cost upwards of C$200,000, and constructing roads and other infrastructure for each well rig cost money as well.

"It doesn't take long before you're saving yourself at least $300,000 per well. So if you're to drill eight wells a pad, you'd save yourself, I'm going to say, $2.5 million."

RADARSAT OFFERS DATA THAT GIVES PRODUCERS A LEG UP

Before the end of this decade, the launch of three Canadian satellites will offer useful imaging data to both serve national interests, as well as improve worldwide data-gathering services for industries such as Alberta's oil and gas sector.

Recently, Federal Minister of Industry Christian Paradis, who is also minister responsible for the Canadian Space Agency (CSA), announced a $706-million contract with MacDonald, Dettwiler and Associates Ltd. (MDA) to build, launch and provide initial operations for the RADARSAT Constellation Mission (RCM) in 2018.

"It's overall just a step forward, I would say, in terms of the capabilities," said David Hargreaves, vice-president, surveillance and intelligence, MDA.

A constellation of three satellites providing around-the-clock coverage, RCM can offer repeat imaging of the same area at different times of day, dramatically improving the frequency of monitoring coastal zones, northern territories, Arctic waterways, and other areas of strategic and defence interest.

Already a supplier of radar-based surveillance and security, MDA expects to expand its service by leveraging RCM's repeat imaging capabilities. The information provided by the RCM satellites will enable MDA to meet a larger range of recurring monitoring needs in growing market segments such as mining, defence and security, as well as the oil and gas sector.

Alain Carrier, CSA project manager, said the new RCM offers expanded capacities benefiting many sectors—including Alberta's oil and gas industry—through a variety of applications.

"Obviously, with synthetic aperture radar images, there are no restrictions with respect to weather. You can use it day or night, in bad weather, clouds or precipitation," he told the *Daily Oil Bulletin*, adding that the technology is useful for mapping purposes in some of the colder, northern areas where oil and gas companies have an interest.

During a company's initial assessments, Carrier said, radar provides excellent imagery of steep terrain. For that reason, he said, an oil and gas company could use the data to create important topographical maps. ■

LABOUR UPDATE

LABOUR MARKET INFORMATION

Alberta created 55,500 jobs in 2012, as the province maintained its position as having the lowest unemployment rate in Canada at 4.5 per cent, as reported by Statistics Canada. In December of 2012, the Canadian economy created 40,000 full-time jobs and drove the unemployment rate to its lowest in four years. These figures indicate that Alberta remains a great place for employment opportunities, but also suggest that there are challenges for employers looking to find workers.

UNITED STATES A POTENTIAL LABOUR SOURCE

The Government of Alberta has recently completed a study identifying the top locations in the United States for recruiting high-demand occupations in oil and gas, construction and engineering occupations.

For information on why Alberta employers should consider the United States as a labour source and things you should know before recruiting in the United States, visit: albertacanada.com/immigration/campaigns/US-Labour-Supply.aspx

FEDERAL SKILLED TRADES STREAM

Citizenship and Immigration Canada's new Federal Skilled Trades stream began accepting applications on Jan. 2, 2013. The new program, capped at 3,000 applications for the first year, allows employers to attract workers in 43 skilled trade occupations.

Visit www.cic.gc.ca/english/department/media/releases/2013/2013-01-02.asp for more information.

UPDATES TO THE TEMPORARY FOREIGN WORKERS ANNEX

The Temporary Foreign Worker (TFW) Annex is an addition to the Agreement for Canada-Alberta Cooperation on Immigration. The annex includes an agreement to implement a number of pilots. One of the pilots allows Citizenship and Immigration Canada to issue an occupation-specific work permit to TFWs working in Alberta in the steamfitter-pipefitter trade. Six new occupations have been added to the pilot: carpenter, estimator, heavy-duty equipment mechanic, ironworker, millwright and industrial mechanic, and welder.

More information about the TFW annex and what the updates mean for you can be found here.

HIRING FOREIGN ENGINEERS AND TRADESPERSONS

Is your organization or company interested in hiring internationally trained engineers or tradespersons? Fact sheets on hiring engineers and the best practices guide on hiring international skilled tradespersons can help Alberta employers know who to target and what to consider when hiring internationally.

THE ALBERTA IMMIGRANT NOMINEE PROGRAM (AINP)

The AINP is an immigration program operated by the Government of Alberta in conjunction with the Government of Canada. It is designed to support Alberta's economic growth by attracting work-ready immigrants to the province. Through this program employers are able to nominate temporary foreign workers in skilled and select semi-skilled occupations to stay permanently in Alberta.

To learn more about the AINP, sign up to watch a pre-recorded webinar or visit albertacanada.com/immigration/immigrating/ainp.aspx

UPCOMING EVENTS

In the spring of 2013 the Government of Alberta, along with Alberta employers, are planning a virtual job fair targeting skilled workers from all over the world. Stay tuned to the next *Alberta Oil & Gas Industry Quarterly* for more information or contact us for more details (EAE.findlabour@gov.ab.ca). ■

Oil and gas statistics

DRILLING RIG COUNT BY PROVINCE/TERRITORY

Western Canada January 22, 2013

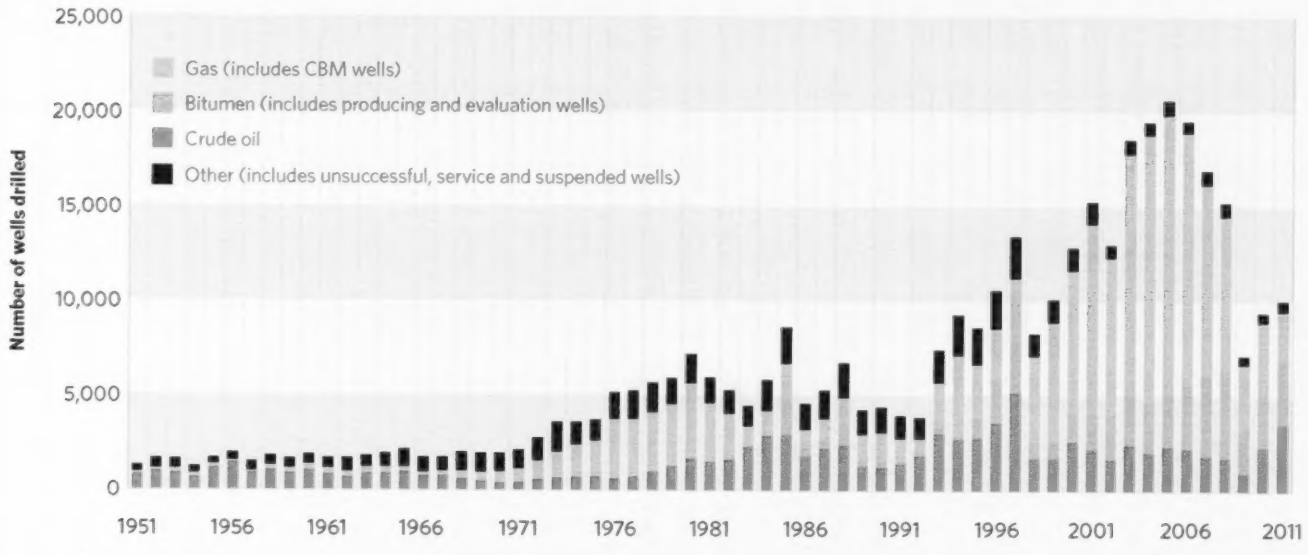
	ACTIVE	DOWN	TOTAL	ACTIVE
Western Canada				% of Total
Alberta	436	149	**585**	75%
British Columbia	52	5	**57**	91%
Manitoba	19	9	**28**	68%
Saskatchewan	91	28	**119**	76%
WC Total	**598**	**191**	**789**	**76%**
Yukon	1	0	**1**	100%

OIL & GAS WELL COMPLETIONS BY PROVINCE/TERRITORY

Western Canada, December 2012

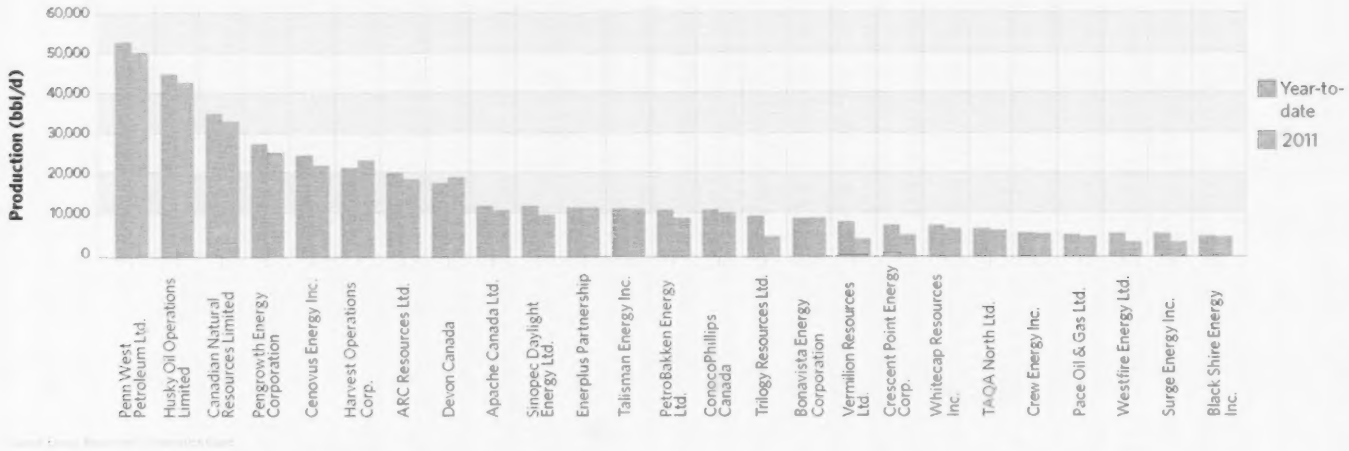
	OIL WELLS		GAS WELLS	
Western Canada	**September 2011**	**September 2012**	**September 2011**	**September 2012**
Alberta	567	523	293	110
British Columbia	2	3	2	3
Manitoba	86	37	0	0
Saskatchewan	333	323	3	1
Total	**988**	**886**	**298**	**114**

DRILLING ACTIVITY IN ALBERTA, 1951-2011



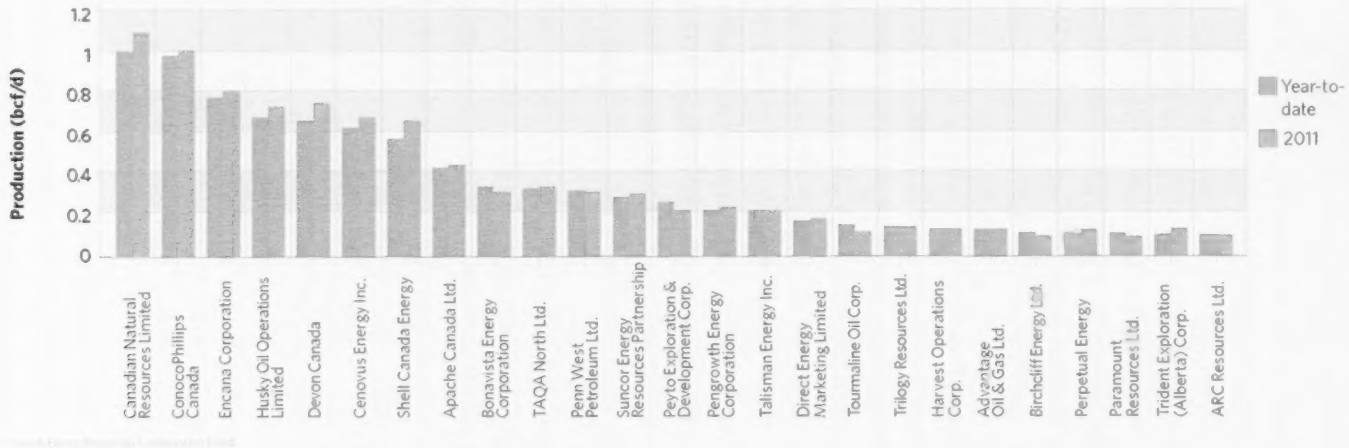
For a glossary of oil and gas terms and other industry information, go to the *Daily Oil Bulletin* toolkit:
http://www.dailyoilbulletin.com/common/toolkit.asp

TOP 25 OIL PRODUCERS IN ALBERTA (AS OF OCT. 23, 2012)

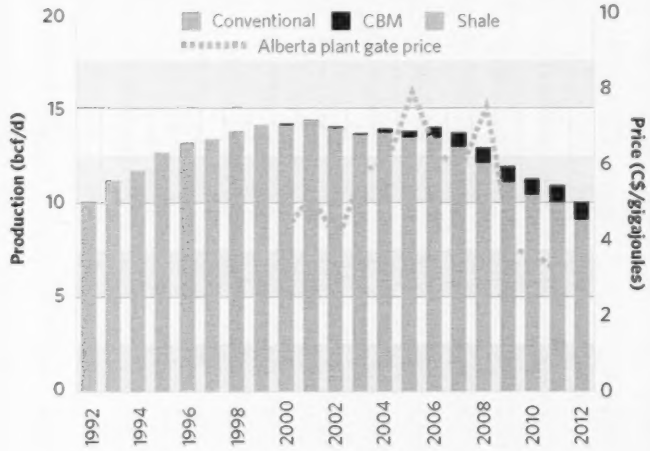


TOP 25 GAS PRODUCERS IN ALBERTA (AS OF OCT. 23, 2012)

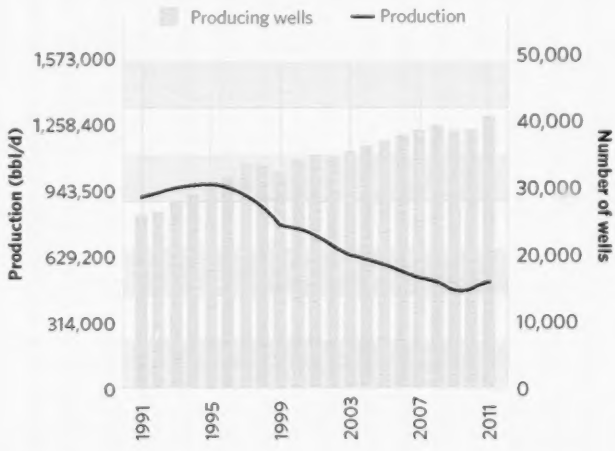
Only gas production reported from oil and gas batteries, gas gathering systems and gas plants is considered. Bitumen facilities, straddle plants and fractionation plants are excluded, as is gas from commercial gas storage schemes.



ALBERTA MARKETABLE GAS PRODUCTION

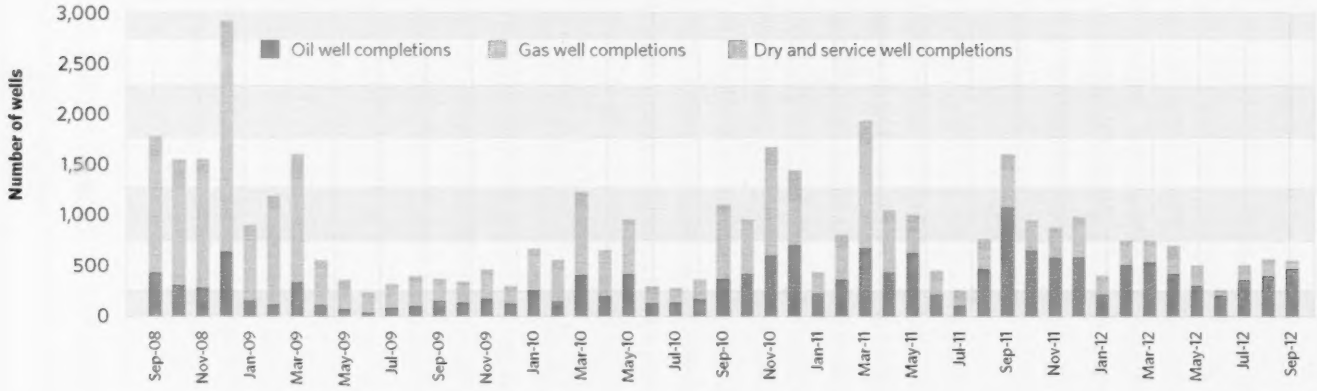


ALBERTA CRUDE OIL PRODUCTION AND PRODUCING WELLS



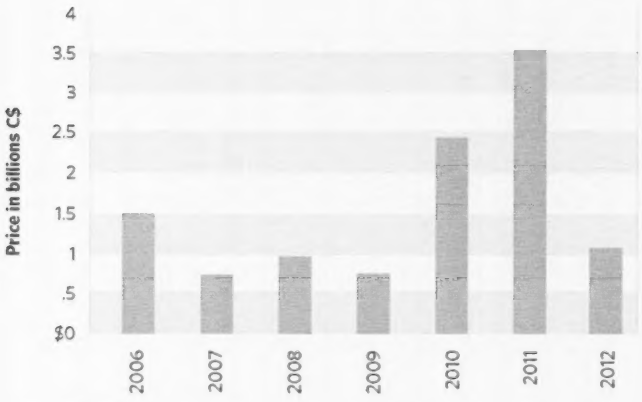
ALBERTA WELL COMPLETIONS

There were 524 well completions in September 2012, down 66 per cent from the 1,531 completions reported in September 2011. To date, there have been 3,301 oil completions, down 18 per cent from the 4,045 oil completions a year ago, and 882 gas completions, down 68 per cent from the 2,787 completions a year ago.



ALBERTA CROWN LAND SALES

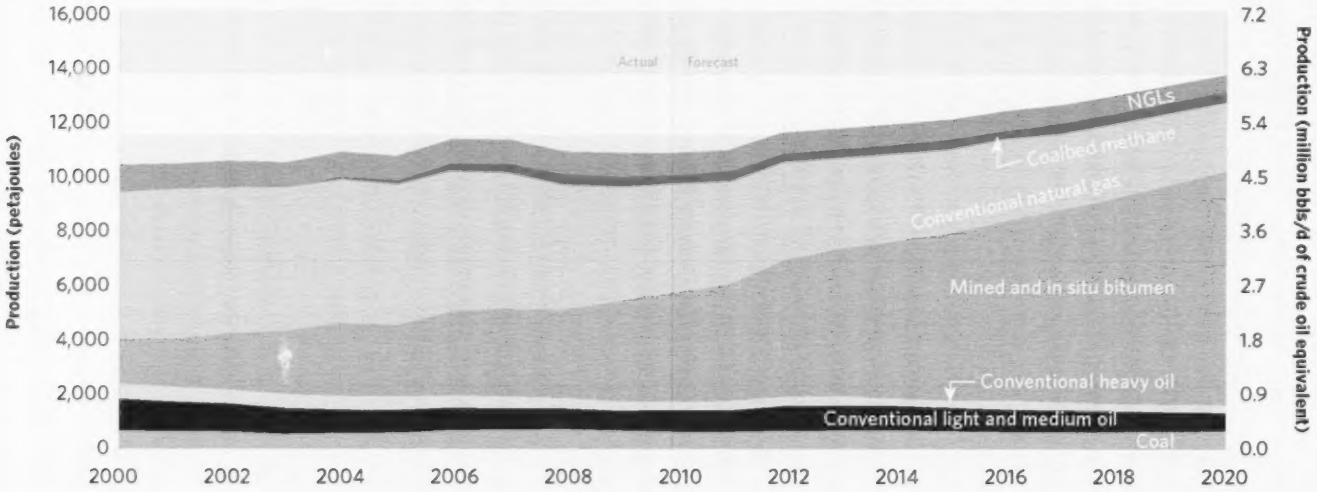
P&NG rights, excluding oil sands



WELL DEPTHS

	GAS			OIL		
	Total metres	Wells drilled	Av. well depths (m)	Total metres	Wells drilled	Av. well depths (m)
2007	10,756,598	9,628	1,117	4,080,460	3,059	1,334
2008	9,517,507	7,886	1,207	3,931,655	2,890	1,360
2009	4,764,321	3,400	1,401	2,501,875	1,848	1,354
2010	6,037,031	3,801	1,588	5,803,292	3,681	1,577
2011	5,005,591	2,185	2,291	8,941,754	5,008	1,785

TOTAL PRIMARY ENERGY PRODUCTION IN ALBERTA



Promising tight oil plays

Alberta's crude oil potential was once thought to be declining—but not anymore. With technological advancements, both conventional fields and new oil-laden fields that were thought to be uncommercial with pre-existing vertical drilling technology are now the hot crude plays in the province. Here's a look at some of the more promising tight oil plays that have been unlocked via horizontal drilling and multistage fracturing technology.

DRAINING THE CARDIUM

Coaxing crude oil out of the ground from the Cardium formation underlying the Pembina oilfield has always been a matter of brute force.

The Pembina #1 discovery well, drilled by Socony-Mobil in the winter of 1953, required a fracture treatment consisting of diesel fuel and 3,000 pounds of sand pumped at 1,800 pounds per square inch of pressure to get oil flowing to the wellbore in commercial quantities.

Almost 60 years later, oil explorers are still at it, cracking sandstone as deep as 9,400 feet beneath the surface in the hopes of striking pay. Only now the wells drilled are horizontal and stretch as far as a mile through the reservoir. Massive fracture treatments consist of 20 tons of sand—more than 12 times as much as was pumped downhole in the Pembina #1—mixed with specialized fluids. And as many as 20 stages are fracture stimulated one after another along the horizontal leg using on average 10,000 horsepower of pumping might.

The size of the prize is huge. The Alberta Energy Resources Conservation Board says the Cardium had 10 billion barrels of original oil in place with around 1.7 billion barrels produced. However, those numbers were derived from

MOST ACTIVE COMPANIES

BEAVERHILL LAKE/ SLAVE POINT CARBONATE

1 Devon Canada Corporation
2 Nexen Inc.
3 Value Creation Inc.
4 Canadian Natural Resources Limited
5 Chevron Canada Resources Limited
6 Athabasca Oil Corporation
7 Encana Corporation
8 Sinopec Daylight Energy Ltd.
9 Celtic Exploration Ltd.
10 Husky Energy Inc.

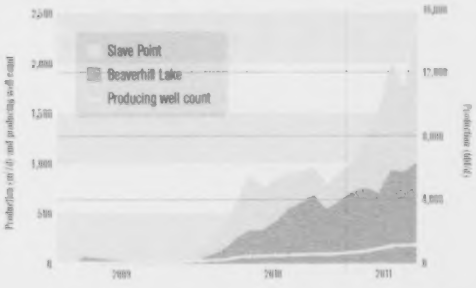
CARDIUM

1 PetroBakken Energy Ltd.
2 Sinopec Daylight Energy Ltd.
3 Whitecap Resources Inc.
4 Vermilion Energy Inc.
5 Spartan Oil Corp.
6 Penn West Petroleum Ltd.
7 ARC Resources Ltd.
8 ConocoPhillips Canada Limited
9 Angle Energy Inc.
10 Bellatrix Exploration Ltd.

BEAVERHILL LAKE/SLAVE POINT CARBONATE

HORIZONTAL WELL LICENCES

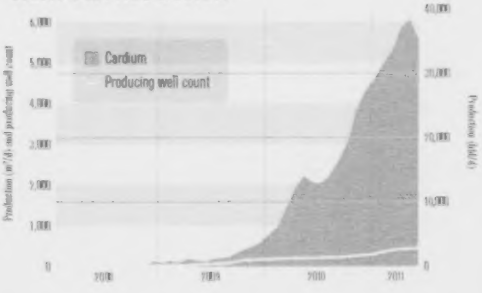
TIGHT OIL PRODUCTION



CARDIUM

HORIZONTAL WELL LICENCES

TIGHT OIL PRODUCTION



All data as of November 2011

historical records from vertical drilling in the play. Estimates now suggest the Cardium could contain as much as 15 billion barrels of oil, and expect 20-30 per cent of that oil could ultimately be recovered.

RETURN TO SWAN HILLS

The Beaverhill Lake carbonate play in the Swan Hills north of Edmonton is another hot tight oil play in central Alberta. Home Oil Company originally discovered the North Swan Hills field in 1956. Amoco Corporation and Gulf Oil Corporation discovered the South Swan Hills unit in 1959. Combined, the two fields had around four billion barrels of oil in place.

Producers are using a 14-stage fracture stimulation program with a retrievable multi-fracturing tool that allows full wellbore access later if needed. More and more acid is being pumped in each fracture stage to open up more reservoir. Operators are now injecting as much as 1,200 cubic metres of acid per stage. The acid treatment is custom designed for the formation rock. Jet pumps are being used to enhance cleanup after the fracture stimulation to mitigate any formation damage, and multi-well pads are being used to cut costs and environmental footprints.

PIERCING THE VIKING

Another major play taking shape in central Alberta is in the Colorado Group, in the eastern reaches of the province. The Viking oil play at Halkirk and Redwater has mainly entered development mode while in other areas it remains in exploration mode. Given the strength of oil prices in this market, the Viking will be targeted by more and more operators providing new well data and evolving the play in the province.

In 2012, WestFire Energy Ltd., which in October 2012 amalgamated with Guide Exploration Ltd. to become Long Run Exploration Ltd., has been the premier Viking player in Alberta. At Redwater, WestFire holds 62 net sections of land. In the first quarter of 2012, the company drilled 32 Viking wells achieving a marked improvement in initial production rates, thanks to its modified completion methods.

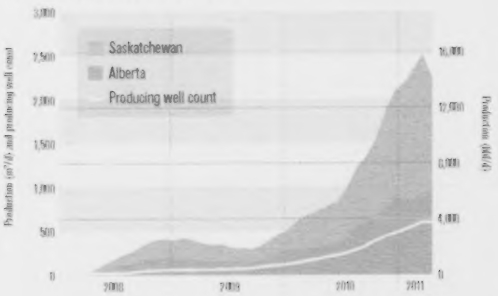
Penn West Petroleum also has a significant position in the Viking oil play. On the Alberta side, production results from the gassy-oil wells drilled in 2012 continue to be encouraging, reports the company. Plans for the third quarter included eight additional wells and the expansion of the company's gas-handling infrastructure to support its 2013 drilling programs.

Novus Energy Inc. recognizes the vast potential of the Viking, and the company recently amassed 46 net sections of Crown lands prospective for Viking oil in the Provost area of Alberta. Novus believes the assembled acreage meaningfully increases the company's future drilling and development inventory. Drilling on these lands is planned for early 2013. ■

VIKING

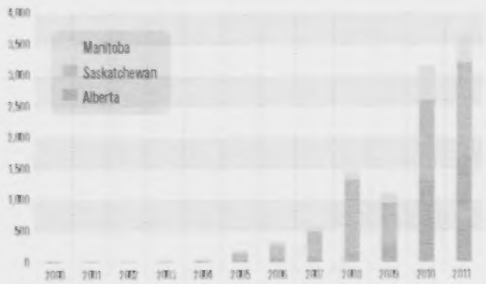
HORIZONTAL WELL LICENCES

TIGHT OIL PRODUCTION

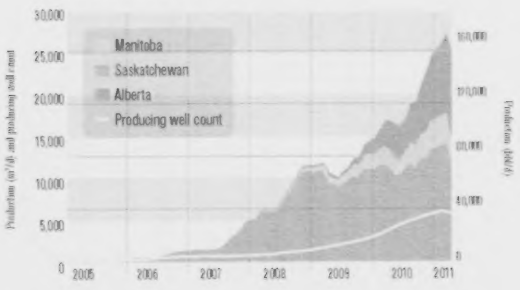


WCSB OVERVIEW

HORIZONTAL WELL LICENCES



TIGHT OIL PRODUCTION



MOST ACTIVE COMPANIES

VIKING

1 WestFire Energy Ltd.
2 Apache Canada Ltd.
3 Penn West Petroleum Ltd.
4 Outpick Energy Inc.
5 Crescent Point Energy Corp.
6 Mancal Energy Inc.
7 Charger Energy Corp.
8 Husky Energy Inc.
9 Bonavista Energy Corporation
10 Copper Island Resources Ltd.

CONTACTS

Industry Associations

• Alberta Land Surveyor's Association	www.alsa.ab.ca
• Canadian Association of Geophysical Contractors	www.cagc.ca
• Canadian Association of Oilwell Drilling Contractors	www.caodc.ca
• Canadian Association of Petroleum Producers	www.capp.ca
• Canadian Energy Pipeline Association	www.cepa.com
• Canadian Gas Association	www.cga.ca
• Canadian Natural Gas	www.canadiannaturalgas.ca
• Canadian Natural Gas Vehicle Alliance	www.cngva.org
• Canadian Society of Exploration Geophysicists	www.cseg.ca
• Canadian Society of Petroleum Engineers	www.speca.ca
• Canadian Society for Unconventional Resources	www.csur.ca
• Gas Processing Association Canada	www.gpacanada.com
• Petroleum Services Association of Canada	www.psac.ca
• Petroleum Technology Alliance Canada	www.ptac.org
• Explorers and Producers Association of Canada	www.explorersandproducers.ca

Alberta Government

• Alberta Energy	www.energy.gov.ab.ca
• Alberta Environment and Sustainable Resource Development	www.srd.alberta.ca
• Alberta Enterprise & Advanced Education	www.eae.alberta.ca
• Energy Resources Conservation Board	www.ercb.ca
• Alberta Innovates	www.albertainnovates.ca
• Alberta Geological Survey	www.ags.gov.ab.ca
• Alberta Surface Rights Board	www.surfacerights.gov.ab.ca

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